

2.0 SITE BACKGROUND

2.1 SITE DESCRIPTION

The Site is located at North 111 Erie Street, Spokane, Washington (Figure 2). It is currently where the Brown Building Materials salvage and sales operation is located and is situated beneath the Hamilton Street James E. Keefe Bridge along the Spokane River. It includes properties now owned by the Spokane River Properties (SRP) and Burlington Northern Santa Fe (BNSF) which were once associated with the former Spokane Manufactured Gas Plant (SGP), the American Tar Company (ATC), and the Chicago Milwaukee & Saint Paul Railroad (CM&SPR) (see Figure 3).

2.2 SITE HISTORY

SGP produced coal gas and carbureted water gas at the property between 1905 and 1948. From 1948 to approximately 1956, a propane-air system was operated from the facility for gas mixing, storage, and distribution. The propane-air system was utilized until natural gas was available, and to reflect the change from coal gas manufacturing to natural gas distribution, the company changed its name to Spokane Natural Gas Company in 1956. In 1958, Washington Water Power (WWP), now Avista Corporation, merged with the Spokane Natural Gas Company and dispensed natural gas from the Site until 1962 or 1963. In 1963, Mr. Richard Brown leased the SGP property from WWP and established Brown Building Materials. Mr. Brown purchased the property in 1978 and conveyed the property to SRP in 1982, of which he is a general partner.

During the operation of the manufactured gas plant, coal tar, a by-product of coal gas production was conveyed to a coal tar processing plant and distribution facility located on a parcel leased from the Northern Pacific Railroad (contemporary BNSF) adjacent to the south side of the former SGP property. The C.G. Betts Company operated the facility until the early 1930s when the operations were taken over by the ATC. The ATC utilized the facility until the early 1967, shipping tar to the Site from Seattle after the SGP was shut down. Mr. Brown began leasing the ATC property from the BNSF in 1968 and continues to lease the property today.

CM&SPR formerly owned the existing riverfront property west of the SGP property and north of the BNSF land. Mr. Brown purchased this property in 1981, and the title is now held by SRP.

2.3 SITE INVESTIGATIONS

In 1987, the U.S. Environmental Protection Agency (EPA) completed a preliminary assessment of both the SGP and the ATC properties and recommended additional investigations for the ATC property. In 1988 EPA conducted a Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) screening site investigation of the ATC property.

In 1981, the Washington State Department of Transportation (DOT) conducted drilling on and around the former SPG and ATC properties to provide design information for the James Keefe Bridge. Contamination was observed at depth in several of the borings and was observed during the bridge construction in 1982.

In 1995, EPA conducted a screening site investigation of the SGP that included sampling and chemical testing of surface water and sediment from the Spokane River. EPA concluded that the samples did not reflect a release of contamination from the Site to the Spokane River. Consequently, EPA did not anticipate further investigation under CERCLA, and referred the Site to the state for further consideration.

DOT conducted further exploratory activities on the Site in 1997 as part of a proposed highway realignment of Trent Avenue. Their study showed the presence of coal-tar waste covering an area of two to three acres and extending below ground surface to a depth in excess of 40 feet. The most heavily impacted soil was reportedly observed in the central portion of the SGP operation areas and near the refining process areas of the ATC property. No coal tar constituents were detected in the nearest city water supply well, the Nevada Street well, located approximately 8,500 feet north-northeast from the Site.

A health consultation prepared for the Washington State Department of Health (DOH) under a cooperative agreement with the U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry (ATSDR) in 1998 stated that no apparent public health hazards exist based on current land and ground water use, but identified the need for further study should Site or local ground water use change. The Spokane County Health District (SCHD) completed a MTCA site hazard assessment of the former SGP property in 1998 and assigned the property a hazard ranking of 3.

Avista Corporation conducted further investigations in 1997 and 1998 to evaluate the effect of the soil contamination on ground water and to determine whether site contaminants had migrated to the Spokane River. The results of these studies further defined the lateral boundaries of the soil contamination identified in the DOT study. These studies also showed that soil contamination does not adversely affect ground water outside the limits of soil contamination. Data from this investigation indicated that during the period of observation, ground water flow appeared to be from the Spokane River toward the Site.

A supplemental site investigation was conducted by Avista Corporation in 1998 to evaluate the vertical extent of contamination, ground water quality and hydraulic gradients in the vicinity of the Site, and to characterize the nonaqueous phase liquid (NAPL) found in the soil contaminated area. The results further defined the lateral and vertical boundaries of the soil contamination at the Site. NAPL was encountered in soil during drilling up to 80 feet below ground surface. The ground water outside of the area of soil contamination showed sporadic detectable levels of chemicals associated with the gas plant operations or coal tar processing

A focused site investigation was conducted by BNSF on the ATC property in 1999 to collect soil and ground water data. Soil samples showed contamination in the ATC area. Ground water samples collected from monitoring wells in the property did not detect the presence of constituents above cleanup levels.

Ecology has combined the Spokane Manufactured Gas Plant and the American Tar Company sites into one referred to as the Hamilton Street Bridge Site with a ranking of three (3) under MTCA.

Avista and BNSF conducted a second supplemental investigation and completed a Remedial Investigation and Feasibility Study under a MTCA Agreed Order in 1999. This supplemental study evaluated the vertical extent of contamination, ground water quality, and hydraulic gradient. Findings of the study, in conjunction with the other previous site investigations, were used to determine the nature and extent of contamination. The Feasibility Study evaluated remedial technologies applicable to the Site.

2.4 PHYSICAL SITE CHARACTERISTICS

2.4.1 Site Condition and Geology

Geologic units encountered at the Site include, youngest to oldest, recent surficial fill materials (including cinder, brick, soil, and basalt cobbles and boulders), unconsolidated sediment, and basalt bedrock.

During the early 1900s, substantial quantities of fill materials were placed in the river for the construction of the CM&SPR. Limited quantities of fill have also been placed across the Site surface at the time. Placement of the fill shifted the riverbank as much as 230 feet north as shown on Figure 3. Fill materials range from 2.5 feet up to approximately 30 feet in thickness, and are thickest on the western portion of the Site and near the river.

The unconsolidated sediments on the Site consist primarily of Spokane River deposits of silt, sand, gravel, and cobbles, and glaciofluvial sediments deposited by the Pleistocene catastrophic floods. The sand, gravel, and cobbles deposited by the Spokane River are undifferentiated from the glaciofluvial deposits. The glaciofluvial deposits consist primarily of sand, gravel, cobbles, and boulders, with some silt. The unconsolidated sediments in the central area of the Site are over 115 feet thick. Bedrock underlying the unconsolidated sediments on Site has only been encountered at a depth of 90 feet BGS in one location but has not been encountered in other locations.

Basalt bedrock outcrops along the western edge of the Site. The basalt forms a cliff face comprising the western boundary of the Site and diverts the Spokane River to the north.

Figures 5 and 6 show two north-south geologic cross sections of the Site for locations shown in Figure 4.

2.4.2 Ground Water Hydrology

The Site is on the southwestern edge of the Spokane-Rathdrum Prairie Aquifer, the primary aquifer in the region and designated by EPA as a sole source aquifer.

Ground water at the Site is encountered approximately 10 to 20 feet below the Site surface with fluctuations of less than 8 feet. Ground water was observed at the highest levels in the spring (April – May), and at the lowest levels in the late summer to fall (August – November). The high and low groundwater levels correspond with the Spokane River levels.

The Spokane River surface water level is generally higher in elevation than ground water except in late spring to early summer. This indicates that the Spokane River locally recharges ground water, and receives only limited recharge from ground water during periods of peak runoff in the late spring to early summer.

River water interacts rapidly with the highly permeable fill materials; the shallow ground water elevations correspond closely to the river level. The native soils, composed of sand and gravel, have a lower hydraulic conductivity than the fill. The coarse fill material acts as an extension of the river while the native deposits, though heavily influenced by the river also reflect regional hydrogeologic conditions.

During most of the year shallow ground water gradients are from the river to the fill, and from the fill laterally and downward into the native sand and gravel aquifer. Intermediate and deeper ground water gradients are northerly. The horizontal water table surface gradients in the shallow zone are very low. During monitoring events, only hundredths of a foot difference observed across the entire Site. During most of the year the water level gradients suggest a convergence of river water, shallow ground water, and deeper ground water in the intermediate zone of the aquifer.